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**DEPARTMENT OF THE INTERIOR****Fish and Wildlife Service****50 CFR Part 17****Endangered and Threatened Wildlife  
and Plants; Determination of  
Endangered Status for *Argyroxiphium*  
*sandwicense* ssp. *sandwicense*  
(*Ahinahina* or Mauna Kea Silversword)****AGENCY:** Fish and Wildlife Service,  
Interior.**ACTION:** Final rule.

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**SUMMARY:** The Service determines  
*Argyroxiphium sandwicense* ssp.

*sandwicense* ('Ahinahina or Mauna Kea silversword) to be an endangered species, under the authority contained in the Endangered Species Act of 1973, as amended. The only known natural population of this plant is located on the east slope of Mauna Kea on the island of Hawaii, State of Hawaii. In addition, a small number of individuals have been planted at other places on the mountain. This species is vulnerable to any substantial habitat alteration, and faces the present threat of elimination through grazing and trampling by feral animals, and the potential threat of damage by insect larvae. This determination that *Argyroxiphium sandwicense* ssp. *sandwicense* is an endangered species implements the protection provided by the Endangered Species Act of 1983, as amended.

**DATE:** The effective date of this rule is April 21, 1986.

**ADDRESS:** The complete file for this rule is available for inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Lloyd 500 Building, 500 NE. Multnomah Street, Suite 1692, Portland, Oregon 97232.

**FOR FURTHER INFORMATION CONTACT:** Mr. Wayne S. White, Chief, Division of Endangered Species, at the above address (503/231-6131 or FTS 429-6131).

**SUPPLEMENTARY INFORMATION:**

**Background**

This taxon was first collected in 1825 by James Macrae, and was described in 1836 by De Candolle. When Macrae visited Mauna Kea, several populations of this silversword were extant on the upper slopes of the volcano, and the species presumably numbered thousands of individuals. The only known collections of the Mauna Kea silversword after 1916 are from the Wailuku River population. In 1916, the taxon was abundant at the Wailuku site. However, today only about 110 individuals remain, 95 of which are nursery-raised plants transplanted into the area. Several undocumented sightings of individuals or small numbers of plants have been recorded as recently as 1955 from other places on the mountain.

There has been some disagreement concerning the proper taxonomic disposition of the taxon. *Argyroxiphium sandwicense* has sometimes been interpreted broadly to include plants of both the islands of Maui and Hawaii, without any recognition of infraspecific taxa. Alternatively, the Maui plants have been segregated at the specific level as *A. macrocephalum*. Recent research supports the acceptance of an

inclusive concept of the species, with one subspecies (ssp. *sandwicense*) confined to the island of Hawaii and one (ssp. *macrocephalum*) native to Maui. Both taxa are known as 'ahinahina in Hawaiian.

The Hawaii taxon historically occupied the alpine slopes of the Mauna Kea volcanic dome, mostly above the tree line and including barren alpine desert areas above other vegetation. The only known extant natural population is found in the upper limits of *Sophora* woodland and the alpine scrub above the tree line along the Wailuku River drainage. The Wailuku River population is found on State lands in the Mauna Kea Forest Reserve and on Hawaiian Home Lands.

There are also historic reports of silverswords from Hualalai and Mauna Loa on the island of Hawaii. The plants of Hualalai may have been *A. sandwicense* ssp. *sandwicense*. No specimens are known from this population, which is no longer believed to be extant. It may have represented an undescribed and now-extinct taxon. Reports from Mauna Loa are believed to have been based on the related *A. kauense*, which is endemic to Mauna Loa.

*Argyroxiphium sandwicense* ssp. *sandwicense* produces a globose basal rosette of dagger-shaped leaves that are up to 1 foot long and usually less than 1/2 inch wide at their midpoint; the leaves are cloaked with silvery hairs. These rosettes grow for an average of 5 to 15 years, reaching diameters of 2 feet or more before producing a rather narrow flowering stalk with numerous branches, each bearing a flowering head about 1 inch in diameter with pinkish ray flowers. After flowering, plants with a single rosette die. Individual rosettes of multiple-rosette plants also die after flowering.

On June 16, 1976, the Service published a proposed rule in the *Federal Register* (41 FR 24523) to determine approximately 1,700 vascular plant taxa to be endangered species. General comments on the 1976 proposal were summarized in an April 28, 1978, *Federal Register* publication (43 FR 17909). *Argyroxiphium macrocephalum* was included in the June 16, 1976, proposal. It is apparent that this was mistaken, and that the intent was to indicate *A. sandwicense* in an inclusive sense, comprising both the Maui and Hawaii taxa.

The Endangered Species Act Amendments of 1978 required that all proposals over two years old be withdrawn. A 1-year grace period was given to those proposals already more than 2 years old. Subsequently, on

December 10, 1979, the Service published a notice of the withdrawal of the portion of the June 16, 1976, proposal that had not been made final, along with other proposals that had expired (44 FR 70796); this notice of withdrawal included *Argyroxiphium macrocephalum*.

*Argyroxiphium sandwicense* was included in the December 15, 1980 (45 FR 82479) updated review notice. *Argyroxiphium macrocephalum* was included in that notice as a taxon no longer under review because it was not considered to be a separate entity. A reproposal for the Mauna Kea silversword subspecies was published March 6, 1985 (50 FR 9092), based on information available at the time of the 1976 proposal and information gathered after that time and summarized in a detailed status report prepared under contract by a University of Hawaii botanist (Carr 1982). The Service now determines the Mauna Kea silversword to be an endangered species with the publication of this final rule.

**Summary of Comments and Recommendations**

In the March 6, 1985, proposed rule (50 FR 9092) and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice that invited general public comment was published in the *Honolulu Star Bulletin* on April 1, 1985. Nine comments were received and are discussed below. A public hearing was requested and held in Hilo, Hawaii, June 24, 1985, five people testified, and their testimony is also included in the following summary.

Comments were received from the Governor of Hawaii, the Hawaii Audubon Society, the Director of the Waimea Arboretum and Botanical Garden, the Environmental Defense Fund, and five private individuals. Testimony at the public hearing was presented on behalf of the Chairperson of the State Department of Land and Natural Resources, and four private individuals. All comments received in the period from March 6, 1985, to May 6, 1985, and all testimony given at the public hearing, have been considered in formulating this final rule. The comment period was reopened for 15 working days following the public hearing, closing again July 15, 1985. One additional letter of comment, from Dr.

Otto Degener, was received during this period. The Governor deferred his support of the listing of the taxon. He stated in his letter of May 1, 1985, that it would be "... premature to make any firm decision," and recommended that representatives of the Service and Department of Land and Natural Resources staff meet to discuss the activities which the State had undertaken, such as the construction of exclosures and propagation of silverswords in these exclosures. All other responding organizations and individuals supported the listing as an endangered species.

The activities listed in the Governor's letter include the construction of a 2-acre exclosure in 1973, a 50-acre exclosure near Wailuku in 1975, and two 5-acre exclosures above Pu'u La'au in 1978; these are all of Mauna Kea within the historic range of the Mauna Kea silversword. Approximately 50 seedlings were planted in the two 5-acre exclosures. In June 1985, the Service inspected the two exclosures; there were 10 silverswords growing in one, and 21 in the other. At least three of the silverswords had flowered during past flowering seasons and one was just coming into flower, but no seedlings or young plants were evident. A total of 385 silversword seedlings were planted in the 50-acre and adjoining 2-acre exclosures between 1974 and 1982. Some of these plants have flowered, and at least 17 seedlings were produced. A census of these exclosures, made by four botanists in August 1984, produced a total count of 110 plants, 15 of which they believed to be remnants of the natural population. The other 95 had been nursery-raised and planted out by the Hawaii State Division of Forestry and Wildlife. The proposed rule, which was based upon a status report completed in 1982 by a University of Hawaii Professor of Botany (Carr 1982), treated only naturally occurring individuals. The estimate at that time was 35, and is now believed to be down to 15 individuals. The comments of Ms. Elizabeth Powell, a botany graduate student presently studying the silversword, indicate that the plant is not self-compatible and that sibling incompatibility may prevent 50% of sibling matings from resulting in viable seed. She states that closely spaced, synchronously blooming plants are required for cross-pollination. As most of the out-planted individuals are from seed collected from one or two parents, and as the remaining populations are small, and the plant is monocarpic, a greater number of individuals must be propagated and new seed sources must

be incorporated if the outplanting program is to be successful and the plant is to be saved from eventual extinction.

Mr. Tom K. Tagawa, testifying as a private citizen, strongly objected to the Service's statement that, "A portion of the only known extant population has been fenced by the State of Hawaii; however, the exclosure has not been effective against the more recently introduced mouflon sheep, which are currently threatening the species' survival by grazing and browsing activities." He believes that, "This statement implies that the State have [sic] constructed exclosure haphazardly and is indifferent to the protection and perpetuation of the Mauna Kea silversword," that "... the success of the endangered species programs depends upon the good working relationship between the Federal and State agencies," and that the Federal Government "... should have supported the State with grants to build a strong, durable exclosure to avoid significant adverse effects on the preservation of the Mauna Kea silversword." Dr. Donald Kyhos, Professor of Botany, University of California at Davis, Dr. Carl Christensen, commenting for the Hawaii Audubon Society, Mr. Rick Warshauer, and Ms. Powell all commented on the ineffectiveness of the exclosures. They contended that the mouflon can readily leap the 4.5 foot fence surrounding the silversword. The Service agrees, as personnel from its Honolulu Endangered Species Field Office have seen mouflon in the Wailuku exclosure. The proposed rule was referring only to the inadequacy of the height of the fence, and was not intended to imply indifference on the part of the State to the protection and preservation of the silversword. Mr. Susumu Ono, Chairperson of the Board of Land and Natural Resources, in reference to the Wailuku exclosure, stated that, "We did have problems in the beginning. However, the problem has been taken care of and the fence has proved quite adequate..." The construction of the exclosures and the planting of silverswords testify to the State's interest in the species. The Service agrees that the success of the endangered species program in Hawaii is dependent upon the cooperation of State and Federal agencies, and believes that it presently has a good working relationship with the State concerning these programs. Formal and informal meetings, exchange of information, funding of programs, and the cooperative development and

implementation of recovery plans are all parts of this. Once a species is listed, funding is available for its conservation through cooperative agreements under section 6 of the Act.

Mr. Tagawa also questioned a statement in the proposed rule that, "[W]ithout the institution of appropriate conservation measures, the species is likely to become extinct..." The statement was intended to express the Service's belief that the Mauna Kea silversword requires immediate attention and management to ensure its survival. A recovery plan to address these needs has been given high priority and will be scheduled for completion as soon as possible.

In the proposed rule, under factor "D" of the Summary of Factors Affecting the Species, the Service stated that, "No regulatory mechanisms exist at the present time." Mr. Tagawa and Ms. Powell both pointed out that the silverswords grow within a State Forest Reserve, and that by law the removal, injury, or destruction of any form of plant or animal life therein is prohibited. The Service has corrected this statement in this final rule. Ms. Powell noted that the mouflon sheep in the same area are also presently being managed on a sustained-yield basis by the State Division of Forestry and Wildlife, and that the two resources are in direct conflict.

Mr. Tagawa strongly objected to having graduate or undergraduate students conduct ecological or other related botanical studies because of a statement "... made by three peers in the environmental fields in the past. 'None of these students were competent to conduct a serious scientific ecological study, although the excursion provided excellent experience for them...' Their final report, however does not in any sense constitute a significant contribution to knowledge." He also questioned the "credibility [sic]" of the "... so called environmental experts in Hawaii." Mr. Tagawa was referring to a student-originated National Science Foundation grant that was awarded to university undergraduate students, based upon their submitted proposal, and whose purpose was primarily to provide field experience for qualified undergraduates. The ecological study at issue was conducted in the rain forests on the island of Maui and had no relation to any study of the Mauna Kea silversword, which grows in the alpine and sub-alpine regions of Mauna Kea on the island of Hawaii. The quoted statement was made by a university professor. The status survey that

provided the documentation to justify listing the Mauna Kea silversword as an endangered species was compiled by Dr. Gerald D. Carr, Associate Professor of Botany at the University of Hawaii. Any information in it provided by students resulted from research leading to an advanced degree. All status-survey work was supervised, reviewed, and accepted by members of the University graduate faculty.

Another of Mr. Tagawa's concerns was the manner in which priorities were set in deciding which species to list as endangered. In Hawaii, priorities for the listing of plants have been set by the Service after consultation with local professional and amateur botanists and after considering the Service's listing priority guidelines (48 FR 43098, Sept. 21, 1983) the individuals consulted on listing priorities, including the State Botanist, botanists from the University of Hawaii and the Bishop Museum, and knowledgeable naturalists, made recommendations to the Service's botanist, who developed a list of what were considered the most endangered of the Hawaiian plants. This list was used by the Service to determine the order in which listing packages were developed for the local species of plants.

The testimony of Mr. Susumu Ono was read at the public hearing by Mr. Libert Landgraf, Administrator of the State Division of Forestry and Wildlife. Two topics, the construction of exclosures and the planting out of silverswords, and the effectiveness of the exclosure fence against the mouflon sheep have been addressed above.

Mr. Ono mentioned that former forester, L.W. Bryan, stated in his notes that he observed a single silversword above Kanakaleonui in 1950, while the proposed rule stated that "the only known collections of Mauna Kea silverswords after 1916 are from the Wailuku River population." The Service has on file nine records of occurrences of the silverswords, other than the Wailuku population, dating from 1834 to 1955. The records include the 1950 Bryan sighting as well as another made by him at a lower elevation in the Wailuku area in 1955. The proposal included only those records that had been documented by the collection of herbarium specimens.

The proposed rule, under factor "B" of the Summary of Factors Affecting the Species, refers to large quantities of fruit removed for propagation purposes and to threats due to collection for horticultural purposes. Both Mr. Ono and Ms. Powell stated that the last large collection of seed was made in 1973 by a well-intentioned individual, and that the seed eventually was given to the

National Park Service and served as the core of the out-planting project. Ms. Powell further stated that the collection was probably more beneficial than detrimental to the species. The Service concurs, and has modified factor "B" to reflect these comments. Collections of whole plants for ornamental or horticultural purposes apparently have been minimal for the last 50 or 60 years.

Under the same item in the proposed rule, the Service made the statement that, "Propagation of silverswords is not easy as few flowers produce viable seed and seed germination is low." Mr. Ono stated that, although detailed germination tests have not been conducted, the State has found Mauna Kea silversword seed quite viable, but short-lived, even when stored under refrigeration. He noted that even with abundant viable seed, very few seedlings in nature become established, but believed this is due to the moisture requirements of the plant rather than its seed viability. Studies by Siegel et al. (1970), Kobayashi (1973), and Powell (information included in her written comments and oral testimony on the proposed rule) all indicate that self-incompatibility, depressed inter-sibling fertility, a narrow range of temperature tolerance, seed dormancy factors, a relatively short seed life, and the soil moisture and other edaphic requirements of the silversword species in Hawaii result in a low rate of regeneration. The highest germination rate, under optimal laboratory conditions, of seed of the Haleakala subspecies was 27.7% (Siegel et al. 1970). Mr. Kaoru Sunada, in his testimony at the public hearing, reported a germination percentage of 20% for the Haleakala plants and 6% for the Mauna Kea plants used in his propagation project.

The proposed rule stated that, "The species grows as a rosette for between 5 and 15 years before flowering." Mr. Ono commented that, "There are some naturally occurring plants which we have observed for about 15 years that have not grown appreciably and still show no indication of flowering," and that, "It is not uncommon for the silverswords planted in better sites to bloom in two to three years. We had some bloom one year after planting." A silversword plant, unless multiheaded, flowers and produces seeds once, then dies. The age at which it flowers varies, but 5 to 15 years is frequently used as an average. Younger or older flowering plants, especially under artificial stress or non-optimal conditions, are to be expected.

Mr. Ono questioned whether the Service had assessed the best scientific

information available regarding the species in formulating its proposal and stated that the Service had not made an effort to contact the State Division of Forestry and Wildlife in gathering its information. He was concerned by an apparent lack of response by the Service to the public and a failure to work with the landowner (the State) while gathering status information. He believed that the Service may have been unaware of the conditions under which the remaining naturally-occurring silverswords have survived and of what was being done by the State to protect and perpetuate the species. Although he disagreed with statements made in the Service's proposal, he did agree that the silversword warranted listing and offered the support of the State Department of Land and Natural Resources in the listing. In gathering the information that led to its proposal to list the Mauna Kea silversword, the Service attempted to address all known threats to the species. The status report and first draft of the proposed rule were prepared under contract by the Research Corporation of the University of Hawaii, whose staff were in informal contact with State personnel. Any information thus provided to the Research Corporation was incorporated into the survey and proposal. The Service has also provided all its endangered plant data to the State Division of Forestry in a cooperative effort to develop a data base. Apparently, these efforts failed to reveal the State's program to plant out silverswords at Pu'u La'au. The Service believes that it has made a good-faith effort to gather information regarding the status of the species and has responded adequately to the concerns of the public and the State, as borne out by the fact that, with the exception of an interim response from the Governor of Hawaii, all the written and informal comments received, and all testimony presented at the public hearing, have supported its determination that the Mauna Kea silversword is an endangered species. Further information brought out in response to the proposed rule regarding the species' status has been incorporated into the final rule.

Mr. Ono's letter continues that the next vital step in protecting a species, after its listing, "... is to develop a recovery plan to which those involved are committed." He believes that the agency proposing listing should be the lead agency in formulating a recovery plan and that the landowner should be involved. He states that recovery programs initiated by the State have suffered from the lack of coordination

among agencies and from recovery activities carried out by other agencies without the State's knowledge. The Service intends to develop a recovery plan for this species and, as with all previous recovery plans, will involve all interested parties, including the landowners.

Comments from six individuals or agencies were received concerning the designation of critical habitat for the Mauna Kea silversword. Mr. Ono did not believe it necessary to designate critical habitat; the other five favored its designation. The Service continues to believe that no net benefit would be provided for the plant by designating critical habitat, and that the designation could make the species more vulnerable to acts of vandalism. The remainder of Mr. Ono's comments concerned recovery actions.

Ms. Elizabeth Powell submitted written comments on the proposal, and testified as an individual and on behalf of the Hawaii Audubon Society at the public hearing. Much of her contribution consisted of extensive historical, biological, distributional, and demographic information. Other of her comments have been incorporated above.

The correct scientific name for the Mauna Kea silversword was the concern of three individuals. Ms. Powell and Dr. Degener believe that the Mauna Kea and the Heleakala plants are distinct at the specific level. Dr. Carr, based on the master's thesis of one of his students (Meyrat et al. 1983), considers the two to be distinct at the subspecific level. The proposed rule distinguishes the two at the varietal level. Based upon research by a Service botanist, the Service now recognizes the taxon at the subspecific level.

Ms. Powell and five other commenters, in their letters or testimony, addressed problems caused by feral ungulates. Mr. Ono believed that the existing enclosures have protected, and can continue to protect, the silversword against damage by feral animals. The remainder believe the feral animals, in some comments specifically the mouflon sheep, to be a great, if not the greatest, single threat to the silversword.

Dr. Otto Degener and Mr. Kaoru Sunda supported the listing of the silversword as an endangered species. Both supplied background and historical information. Their specific comments have been incorporated above. Mr. Rick Warshauer stated that the listing of the silversword is long past due and may now be too late. His other comments also have been incorporated above.

#### Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the Mauna Kea silversword should be classified as an endangered species. Procedures found at section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations promulgated to implement the listing provisions of the Act (codified at 50 CFR part 424) were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Argyroxiphium sandwicense* DC. ssp. *sandwicense* (Mauna Kea silversword or 'ahinahina) are as follows:

**A. The present or threatened destruction, modification, or curtailment of its habitat or range.** The species historically was abundant on Mauna Kea from the 8,500 foot level to the 12,000 foot level. The activity of feral animals (goats, cattle, sheep, pigs, and horses) that was first introduced in the late 18th century has eliminated the silversword from the fragile upper zones of its former range and has reduced the species throughout its range to one known natural population of about 15 individuals. Feral animal populations have vastly altered and degraded the vegetation of Mauna Kea in general (Warner 1960). Direct results of animal activity have included mechanical damage of aerial and subterranean plant parts, consumption of plant material, and dispersal of exotic plant species. Secondary effects include wind and water erosion of the thin soil mantle after it has been stripped of stabilizing vegetation.

The only known extant natural population of this species has been fenced by the State of Hawaii; however, the enclosure is too low to be effective against more recently introduced mouflon sheep, which threaten the species' survival by grazing and browsing activities.

**B. Overutilization for commercial, recreational, scientific, or educational purposes.** The species is of horticultural and ornamental interest, and in the past was threatened by collection of seed for propagation or of entire plants for ornamental purposes. However, these activities are now believed to be minimal, and represent only a potential threat to its existence. Propagation of silverswords is not easy as few flowers produce viable seed and seed germination is low (Kobayashi 1974).

**C. Disease or predation.** The closely related Haleakala silversword is damaged by the predacious larvae of insects such as *Rhynchephestia rhabdotis* and *Tephritis cratericola*, which were found to have damaged a mean of 60% of the seeds produced. An insect thought to be the latter or a similar species has been observed on the Mauna Kea silversword (Carr 1982). As these are native insects which evolved with the silversword, they may not be a threat to the plant, at least under normal conditions. Plants have been severely grazed by introduced herbivores even within exclosures established for the protection of the silversword.

**D. The inadequacy of existing regulatory mechanisms.** Most of the silverswords grow within the boundaries of the Mauna Kea Forest Reserve and are thus protected by State law against removal, injury or destruction. Federal listing would automatically invoke listing under Hawaiian State law, which would provide additional protection, and which would make Section 6 funds available for conservation programs under a cooperative agreement between the State and the Service.

**E. Other natural or manmade factors affecting its continued existence.** The extremely small size of the remaining populations of the species threatens its reproductive capacity and has resulted in a reduced gene pool that may threaten its adaptive capacity. The species grows as a rosette for between 5 and 15 years before flowering. Its low reproductive potential has been severely affected by reduction of the population size. Very few individuals produce a fruit crop in any given year. For 2 or more years no plants may bloom, and in some years only 4 or 5 plants may bloom.

Concurrent with population decline in insect-pollinated species, such as the silversword, is often a loss of evolved pollinator species. The drastic alteration of the upper forest zone on Mauna Kea in general (Warner 1960) may have resulted in a parallel reduction of potential pollinators.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by the species in determining to make this rule final. Based on this evaluation, the preferred action is to list *Argyroxiphium sandwicense* ssp. *sandwicense* as endangered. This designation reflects the strong likelihood that, without the institution of appropriate conservation measures, the species is likely to

become extinct throughout its range. The reasons for which critical habitat is not being designated are discussed below.

#### Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for this species at this time. As discussed under Factor "B" in the Summary of Factors Affecting the Species, *Argyroxiphium sandwicense* ssp. *sandwicense* potentially is threatened by taking, an activity difficult to control and not regulated by the Endangered Species Act with respect to plants, except for a prohibition against removal and reduction to possession of endangered plants from areas under Federal jurisdiction.

The species is known only from lands owned by the State of Hawaii and from Hawaiian Home Lands. The State is aware of the existence of the species and has taken preliminary steps for protection. Upon Federal listing the silversword will be placed upon the Hawaii State list of Endangered plants; Hawaii law prohibits taking and encourages conservation by State governmental agencies for such species. See Hawaii Rev. Stat. ch. 195D, as amended (1976 Replacement & Supp. 1984). Management for the survival and recovery of the species can be coordinated between the U.S. Fish and Wildlife Service and the State of Hawaii. No net benefit would be provided to *Argyroxiphium sandwicense* ssp. *sandwicense* through critical habitat designation, and publication of critical habitat descriptions in the **Federal Register** and local newspapers, as required by law, could make this species even more vulnerable.

#### Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States, and requires that recovery

actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibition against collection are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402, and are now under revision (see proposal at 48 FR 29990; June 29, 1983). Section 7(a)(2) requires Federal agencies to consult with the Service on any action that is likely to jeopardize the continued existence of a listed species. If a Federal action may affect a listed species, the responsible Federal agency must enter into formal consultation with the Service. Currently, no activities to be authorized, funded, or carried out by Federal agencies are known to exist that would affect *Argyroxiphium sandwicense* ssp. *sandwicense*.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 set forth a series of general trade prohibitions and exceptions that apply to all endangered plant species. With respect to *Argyroxiphium sandwicense* ssp. *sandwicense*, all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, or sell or offer for sale this species in interstate or foreign commerce. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered plant species under certain circumstances. No trade in this species presently is known. It is anticipated that few trade permits involving this species will be requested.

Section 9(a)(2)(B) of the Act, as amended in 1982, prohibits the removal and reduction to possession of endangered plant species from areas under Federal jurisdiction. This prohibition now applies to *Argyroxiphium sandwicense* ssp. *sandwicense* if it is found to occur on land under Federal jurisdiction. Permits for exceptions to this prohibition are available through section 10(a) of the Act and regulations to be codified at 50 CFR 17.62 (50 FR 39681, September 30, 1985). The only known extant natural population of this species occurs on

State of Hawaii or Hawaiian Home lands. It is anticipated that no collecting permits will be requested for the species. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, DC 20240 (703/235-1903 or FTS 235-1903).

#### National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

#### Literature Cited

- Carr, G.D. 1982. Status report on *Argyroxiphium sandwicense* var. *sandwicense*. Research Corporation of the University of Hawaii, under contract 14-16-001-79096 to the U.S. Fish and Wildlife Service. 41 pp.
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- Meyrat, A., G.D. Carr, and C.W. Smith. 1983. A morphometric analysis and taxonomic appraisal of the Hawaiian silversword *Argyroxiphium sandwicense* D.C. (Asteraceae). Pacific Science 37(3):211-225.
- Siegel, S.M., P. Carroll, C. Corn, and T. Speitel. 1970. Experimental studies on the Hawaiian silverswords (*Argyroxiphium* spp.): some preliminary notes on germination. Botanical Gazette 131(4):277-280.
- Warner, R.E. 1960. A forest dies on Mauna Kea. Pacific Discovery 13:6-14.

#### Author

The primary author of this final rule is Dr. Derral R. Herbst, U.S. Fish and Wildlife Service, 300 Ala Moana Blvd., P.O. Box 50167, Honolulu, Hawaii 96850 (808/546-7530).

#### List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

## Regulation Promulgation

## PART 17—[AMENDED]

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*).

2. Amend § 17.12(h) by adding the following, in alphabetical order under

the family Asteraceae, to the List of Endangered and Threatened Plants.

§ 17.12 Endangered and threatened plants.

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(h) \* \* \*

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Asteraceae—Aster family:						
<i>Argyroxiphium sandwicense</i> ssp. <i>sandwicense</i> .	'Ahiwahina (Mauna Kea silversword)	U.S.A. (HI)	E	219	NA	NA

Dated: March 11, 1986.

P. Daniel Smith

Deputy Assistant Secretary for Fish and Wildlife and Parks.

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